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Abstract

Avian coccidiosis is the most important parasitic disease in poultry production (Dalloul and Lillehoj, 2006). Intense use of anticoccidials increases the risk of resistance development against these drugs. Combined with increased consumer concerns and a trend towards organic and free range production, the demand for research in the use of natural compounds as an alternative to anticoccidials has increased.

In this study the protective effects of artemisinin and a dichloromethane extract from dried leaves of *Artemisia annua* (cv Artemis, Mediplant) administered via the feed was investigated in broiler chickens (Ross 308) 5 and 7 days after experimental oral inoculation with 4000 sporulated *Eimeria tenella* oocysts (Houghton strain, isolate K-347-1) at day 5 and 7 post infection.

There were no differences in body weights or feed intake between the groups regardless of treatment or infection. Among the infected groups the proportion of chickens with no or mild lesions, i.e. lesion score 0-1 (Johnson and Reid, 1970), was significantly higher 5 days post infection in the group treated with artemisinin compared to the untreated group 5 days post infection. However, the caecal lesions did not differ significantly among any of the infected groups 7 days post infection (see Figure 1). There were no significant differences in caecal oocyst output among the infected groups.

This is the first study evaluating the effect of a dichloromethane extract from A. annua and as seen in the figure, there seems to be a dose dependant correlation with severity of lesions. Furthermore, the observed effects of artemisinin on lesion scores confirm results demonstrated previously (Allen et al., 1997; del Cacho et al., 2010). However, gross lesions in chickens treated with artemisinin appeared more healed on day 7 post infection compared to untreated infected birds with similar lesion score. This may be suggestive of an immunomodulatory effect of artemisinin. On-going histological investigations of the lymphocytic response in the caeca will clarify this.

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Keywords: *Eimeria tenella*; artemisinin; broilers

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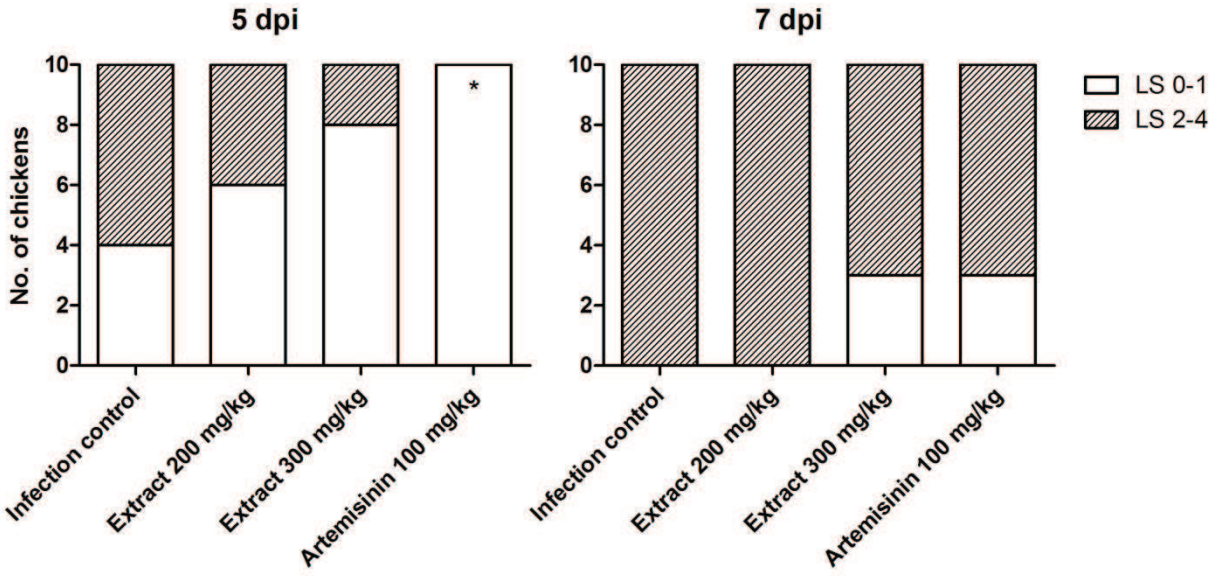
Figures

Figure 1 Relationship between lesion scores (LS) and treatments 5 and 7 days post infection.
* indicates lesion scores significantly different from infection control (p< 0.05)



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